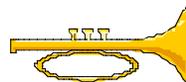


ANNOUNCEMENTS



Ryan Sanders Bench Dedication: On April 17, dozens of colleagues, friends, and family gathered along the creek east of the David Skaggs Research Center to share in the dedication of the garden bench built in remembrance of Ryan Sanders. Ryan's wife, Maria Neary, spoke of the tremendous outpouring of love and support she has received since Ryan's death in an airplane crash on May 3, 1999. The garden bench, a beautiful stone structure adjacent to the Aeronomy Lab's location in the north end of the building, will serve as a place of peace and reflection for all who visit.

AL Hosts OAR Computing Meeting: The Aeronomy Lab's Computing and Networking Resources Group (CNRG) hosted a meeting of the Office of Oceanic and Atmospheric Research (OAR) Technical Committee on Computing Resources (TCCR) on April 25-27. This is an annual gathering of systems administrators and other OAR computing personnel to discuss issues related to computing and networking in the organization. Over 30 people attended the meeting, including the Chief Information Officers for DOC (Roger Baker), NOAA (Robert Kidwell), and OAR (Nancy Huang).

Other Notable Items: Christopher Williams has won a grant from the CIRES Research Innovation Program. The CIRES program promotes creative, unconventional, and/or fundamental research that might otherwise be difficult to fund. In collaboration with the University of Washington, Christopher will develop an acoustic rain gauge that combines the wind profiler processing techniques developed at the Aeronomy Lab with remote sensing methods developed by oceanographers. The design uses a hydrophone placed underwater to differentiate sounds produced by different sized rain drops hitting the surface... Harald Stark has won a one-year postdoctoral fellowship from the German National Science Foundation (Deutsche Forschungsgemeinschafts). He will use the fellowship to continue his research in the Atmospheric Chemical Kinetics group... Karl Froyd, of the Atmospheric Chemical Kinetics group, has been awarded one of six Graduate Research Fellowships given by CIRES for the 2000-2001 academic year. He will work with Ravi on a project titled "Ion-induced Nucleation: The Role of Cluster Ions Containing NH_3 , H_2SO_4 , and H_2O ."



A.R. Ravishankara (Ravi) has been elected as a member of the U.S. National Academy of Sciences. Election to membership in the Academy is considered one of the highest honors that can be accorded a U.S. scientist, and recognizes distinguished and continuing achievements in original research. Ravi, who heads the Aeronomy Lab's Atmospheric Chemical Kinetics group, was cited "*for fundamental contributions to understanding and quantifying important processes critical to the chemistry of the atmosphere. He has used highly innovative techniques to advance the knowledge of ozone depletion, climate change, and atmospheric pollution. He has thereby played a leadership role in shaping understanding of global chemical changes.*"

☆☆☆

Susan Solomon will travel to Prague, Czechoslovakia,

in June to be inducted as a Foreign Member of the Academia Europaea, Earth & Cosmic Sciences Section. The Academia Europaea was founded in 1988 as an international, nongovernmental association of individual scientists from all disciplines who are experts and leaders in their subjects. There are about 50 foreign members among the Academia's 1800 members.

☆☆☆

Joachim Curtius, who recently began a postdoctoral position with the Atmospheric Chemical Kinetics group, has received the Otto Hahn Medal from the Max Planck Society. The award recognizes the excellence of Joachim's doctoral thesis on particulate emissions from aircraft. It carries a one-year stipend in support of his postdoctoral research.

FRONTIERS IN OUTREACH: PROTOTYPE FOR A "NATIONAL CLASSROOM" ON THE INTERNET

On Earth Day April 19, Tom Thompson teamed with colleagues across the nation to present a live "Internet lecture" on the ozone layer and the recently completed field mission based in Sweden. About 150 students assembled in Wichita, Kansas, watched a video projection of the lecture and posed questions in the interactive presentation. Others were able to use personal computers to join in remotely. Tom, Paul Newman of NASA, and Karena McKinney of Caltech gave the lecture, which was choreographed with the internet display of "viewgraphs", much like a traditional presentation.

The effort, sponsored by Boeing and presented in cooperation with the Kansas State Research & Extension and Cox Communications, was a first

attempt of the group to use new technologies that are rapidly becoming available for use on the Web. Tom assembled a Web page (still up at www.users.uswest.net/~tlthompson2/hearmeslides/lecture.html) that includes all of the slides used in the presentation. Tom's Web page also used a "Web camera" and free software that enabled the audience to hear and see the Boulder, Wichita, Pasadena, and Greenbelt participants.

Tom's biggest apprehensions were related to possible technical failures in the new and complex setup, but the event went off without a hitch. Tom and his colleagues say that they hope to do more teaching in the high-tech "national classroom" they've created.



HOME and AWAY

Forest Fires: An Air Quality Influence that Really Goes the Distance

It's no surprise that forest fires affect the quality of the air on local and even regional scales. But new research at the Aeronomy Lab has shown that the effect can extend even thousands of miles away, crossing the entire North American continent. Gerhard Wotawa (an Aeronomy Lab visitor) and Michael Trainer (of the Theoretical Aeronomy group) have shown that lightning-induced forest fires burning in northwestern Canada sent plumes of carbon monoxide to the eastern seaboard and southeastern U.S., adding to the mix of human-induced air pollution, during summer of 1995.

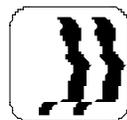
The study, published in the April 14 issue of *Science*, shows that these 1995 forest fires were, at times, the largest source of summertime carbon monoxide pollution more than 2000 miles away in the eastern U.S. This is the first time that scientists have been able to show that forest fires that often occur naturally in high-latitude northern regions can have an atmospheric impact as far away as the mid-latitudes of the U.S.

The study used data from the 1995 Southern Oxidants Study air quality field experiment centered around Nashville, and covering several eastern states in the region, together with models of the winds affecting the region. Gerhard and Michael traced the winds backwards from the eastern states region and found that high periods of carbon monoxide in the region occurred in air that had originated during specific forest fire episodes in Canada.

Carbon monoxide levels were about doubled when the plumes of the forest fires passed through the region. Sometimes, higher ozone concentrations also accompanied the plumes. The summer of 1995 was one of the hottest on record in the eastern U.S., and the forest fires added to air pollution levels that were already quite high. The results show that there are times when the impact of North American fires

may have to be taken into account when considering the causes of pollution.

Human activities such as the burning of fossil fuels for transportation and power generation cause air pollution. Natural factors such as forest fires can further affect air quality by emitting carbon monoxide and other gases that lead to the production of ozone. Forest fires burned over 17 million acres in Canada during 1995, an area that is half the size of the state of Florida. Forest fires have been increasing in remote regions of North America during the last decades due to prolonged drought periods or climate variability. Extreme forest fire conditions in North America occurred two times in the 1980s and three times during the 1990s.



WHAT'S UP WITH PEOPLE

Aeronomy Lab scientists were recently recognized for milestones in their years of service with NOAA: Jerry Weinstock (40 years), Walt Harrop (40 years), and Richard Winkler (35 years).

Jerry Weinstock has retired after over 40 years as a research scientist at the Aeronomy Laboratory. He will continue his theoretical studies of atmospheric waves and turbulence as an Emeritus scientist with the Lab... **Jeff Hicke** has left the Meteorological Chemistry group to take a postdoctoral research position at the University of Colorado... **Sarah Thompson** has left the Computing and Networking Resources Group to take a new position as a PC administrator with the Forecast Systems Lab... **Joachim Curtius**, of the University of Heidelberg, has begun a postdoctoral position in the Atmospheric Chemical Kinetics group, where he will conduct studies of new particle formation... In June, **Rob Harley** is returning to the University of California at Berkeley and **Gerhard Wotawa** is returning to the University of Agricultural Sciences in Vienna, completing their one-year visits with the

Theoretical Aeronomy group... In the Tropospheric Chemistry group, **Craig Stroud** completed his Ph.D. and has left the group to begin postdoctoral chemical modeling research at York University. **Dennis Nicks**, from the University of Alaska at Fairbanks, is joining the group to do postdoctoral research on speciating sulfur compounds in aerosol particles. **Alice Delia**, a graduate student at CU, will work with the group on chemical speciation of aerosol particles... Three students will do summer internships with the Aeronomy Lab through the Practical Hands-on Application to Science Education (PHASE) program. They are: **Asher Ghertner** (Colby College), **Shane Murphy** (CU), and **Rebecca Washenfelder** (Caltech)... We wish everyone the best in their new endeavors, whether here or elsewhere!

COMMUNICATING OUR SCIENCE

To Decisionmakers: In May, Susan Solomon hosted several Congressional members and staffers on a flight of the NOAA WP-3D research aircraft over the Washington, D.C./Baltimore area. The tour highlighted the use of the P-3 aircraft in air quality and hurricane research. Susan and her group gathered air quality data on the flight... Dan Albritton and Chris Ennis were on the drafting team for a special report provided in May to the Parties of the Montreal Protocol, "Assessing the Impact of Short-Lived Substances on Stratospheric Ozone." John Daniel and Victor Dvortsov were among the international reviewers of the document... On April 6, Dave Parrish briefed the Environmental Protection Agency on the North American Regional Experiment (NARE) studies of the transport of North American continental air pollution eastward across the Atlantic Ocean... On March 14, Dan Albritton presented a talk on "Current Air Quality Research Findings and Their Environmental Implications" at a meeting of the Strategic Environmental Research and Development Program (SERDP) Scientific Advisory Board of the Department of Defense, Department of Energy, and the EPA... Dan Albritton participated in planning discussions for the first scientific assessment of particulate matter (PM), which occurred at the NARSTO Annual Meeting in Washington, DC, in March. Fred Fehsenfeld attended a May 25-26 meeting on the PM assessment and will be a lead author of one of the chapters... Dan Albritton, Susan Solomon, and Dan Murphy participated in the February 15-17 drafting meeting of the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report of the state-of-understanding on climate-change science, held in Auckland, New Zealand... On February 17, Jim Meagher gave a presentation at OAR Headquarters on recent findings from the Aeronomy Lab's air quality research.

To the Scientific Community: Venues included:

- *Scientific Conferences and Symposia:* In April, Adrian Tuck gave two invited presentations at General Assembly XXV of the European Geophysical Society on scale invariance of meteorology and chemistry near the tropical tropopause. At the

same meeting, Shanhu Li gave a talk on the Southern Oxidants Study/Atlanta 1999 single-particle measurements... Mary Gilles gave a talk on atmospheric formation of hypiodous acid (HOI) at the 24th Informal Conference on Photochemistry held in Puerto Rico in April... In early April, George Kiladis presented a talk on "Tropical Convection and Preferred Modes of Southern Hemisphere Circulation at Intraseasonal Time Scales" at the Sixth Conference on Southern Hemisphere Meteorology and Oceanography held in Santiago, Chile... Ravi gave a talk at the spring assembly of the German Physical Society, held in Bremen in March... Several members of the Tropical Dynamics and Climate group and the Theoretical Aeronomy group made presentations at the Mesosphere/Stratosphere/Troposphere (MST9) Radar Workshop held in Toulouse, France, in mid-March. Ken Gage chaired a session of the meeting and served on the Program Committee... Susan Solomon gave a talk at a symposium honoring Harold Johnston at the American Chemical Society meeting held in San Francisco in March... Michael Trainer participated in the Gordon Conference on Biogenic Hydrocarbons and the Atmosphere, held in Ventura, California, February 27-March 3.

- *Research Workshops:* Members of the Tropical Dynamics and Climate group participated in a NASA Tropical Rainfall Measuring Mission (TRMM) Field Campaign Workshop held at the University of Utah on May 22-26... In April, Claire Granier and Ravi attended a meeting of the International Global Atmospheric Chemistry program in Aspen... Several Aeronomy Lab scientists participated in the Workshop on Intercontinental Transport and Chemical Transformation (ITCT) held in Tokyo March 16-17. Fred Fehsenfeld serves as one of three international leaders of the ITCT, which is a newly formed project of under the International Geosphere-Biosphere Programme... Several Aeronomy Lab scientists gave talks, presented posters, and served as session chairs at the Southern Oxidants Study 2000 Data Analysis Workshop held at Research Triangle Park on March 6-10... George Reid gave an invited lecture on solar direct radiative forcing of climate at the NASA-sponsored Solar Influences Workshop held in Phoenix in March.

- *Invited Lectures and Seminars:* On May 8, Leslie Hartten was the invited speaker at the State University of New York-Oneonta Meteorology Program's annual awards banquet. She described her career experiences since graduating from Oneonta... On May 2, Dan Murphy presented a Planetary Sciences seminar at Caltech on the links between high altitude aerosols and geochemistry... In April and May, respectively, Jim Meagher and Fred Fehsenfeld made invited presentations at the monthly meetings of the Air Quality Research Subcommittee of the Committee on Environment and Natural Resources (CENR), on the topic of intercontinental transport of air pollutants... Ann Middlebrook gave an invited seminar at the NASA Ames Research Center on May 4 on the topic of the single-particle measurements made during the Southern Oxidants Study's 1999

experiment in Atlanta. She spoke on that topic also at the CU Mechanical Engineering Department on May 1... Susan Solomon gave an invited lecture at Carleton College in April... Shanhu Li gave a talk at the Osaka Prefecture University in Japan in April about the Southern Oxidants Study/Atlanta 1999 single-particle measurements... Ravi gave a seminar at Texas A & M University on April 18. He also spoke at Denver University in April on the atmospheric chemistry of the hydroxyl radical... In March, Ranajit Talukdar gave a seminar on the chemistry of the nitrate radical (NO₃) at the National Institute for Environmental Studies in Tsukuba, Japan, and a talk on atmospheric chemistry at Nagoya University... In March, Wayne Angevine gave a talk on "Wind Profiler Observations and Urban Plume Studies from the 1999 Nashville Regional Air Quality Study" at the Institute for Tropospheric Research in Leipzig. He also gave an informal seminar on the topic at the German Weather Service's Meteorological Observatory Lindenberg... In February, Dave Parrish gave an invited talk at Harvard University on modeling of tropospheric chemistry.

To Media: Dan Albritton gave a presentation on global warming May 25 at the Scripps Howard Institute on the Environment, a conference presented by the CU Center for Environmental Journalism. Environmental journalists from all across the country attended... Gerhard Wotowa and Michael Trainer gave numerous interviews to media regarding their April paper in *Science*, which identified the long-range influences of forest fires on air quality (see story, p. 2)... Dave Fahey was quoted in the March 25 issue of *New Scientist* in an extensive article about Arctic ozone.

To Industry: Ken Gage participated in a meeting of the Management Review Board of the Cooperative Research And Development Agreement (CRADA) in Santa Clara in April... Dan Albritton presented a talk on global warming at the 2nd annual International Colloquium and Exhibit on Environmentally Preferred Advanced Generation (ICEPAG 2000) April 5 in Newport Beach, CA. Managers, planners, scientists, and engineers from the power industry attended.

To Students and Teachers: Ned Lovejoy gave a presentation and demonstration on "Particles in the Atmosphere: What They Are and What They Do" as part of the David Skaggs Research Center's Bring Your Child to Work Day events on April 27. Joachim Curtius assisted with the event... Leslie Hartten is mentoring a New Vista High School student, Natty Zola, in his research into the daily cycle of winds over the Galapagos for his Research Science class. This summer, Leslie also will work with an undergraduate intern, Pauline Datulayta, from Queens College in New York City, as part of CU's SMART (Summer Multicultural Access to Research Training) program... On March 30, Donna Sueper gave a lab tour and presentation on ozone to a group of 17 students with the I Have A Dream Foundation... On March 24, Dan Albritton

presented a lecture on the interaction of atmospheric science and policy to an undergraduate class at CU.

To the Public: On April 29, Wally Clark gave a talk on "Periodicities in Nature with Emphasis on Climate" to the Rocky Mountain Climbers Club.

To Our Visitors: In April, Walt Harrop and Dave Fahey hosted a tour of the Aeronomy Lab for Roger Baker, Chief Information Officer of the Department of Commerce... On April 13, Dan Albritton hosted the Aeronomy Lab portion of a visit by Linda Bilmes and others from the Department of Commerce... Pai-Yei Whung and John Gaynor, of OAR's Office of Scientific Support, visited the Aeronomy Lab on March 29 and discussed air quality research with several scientists... Chris Ennis and Sandra Laursen presented an Aeronomy Lab overview and gave a laboratory tour to Stephanie Harrington and Michael Whitaker (OAR) during their visit to the David Skaggs Research Center on February 23.

Through Service on Scientific Panels and Boards:

Dave Fahey is serving on the National Research Council's Committee on Atmospheric Chemistry... Dan Albritton is serving on the NOAA Council on Long-term Climate Monitoring, a group that is identifying the Nation's information needs in the climate arena and using them as a focus for planning future climate observations research across NOAA's Line Offices (OAR, the National Weather Service, and the National Environmental, Satellite, Data, and Information Service)... Fred Fehsenfeld is one of three international leaders of the recently formed Intercontinental Transport and Chemical Transformation (ITCT) project of the International Geosphere-Biosphere Programme (IGBP).

DOWN THE ROAD



June 5-9: 2000 Conference on the Atmospheric Effects of Aviation Project (AEAP), Snowmass.

June 26-30: Climate System Model Workshop, Breckenridge, Colorado.

July 3-8: Quadrennial Ozone Symposium, Japan.

July 10-14: Royal Meteorological Society, 150th Anniversary Conference, Cambridge, UK.

July 24-27: Final Drafting Session, Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Victoria, British Columbia.

August 7-11: 14th Symposium on Boundary Layers and Turbulence, Snowmass, Colorado.

On the Air! is a quarterly publication of the NOAA Aeronomy Laboratory. It is posted on the World Wide Web at www.al.noaa.gov. Please send comments, suggestions, or questions to: Chris Ennis (phone 303-497-7538; email Christine.A.Ennis@noaa.gov).

